



## **Correction to 'Radiation belt electron precipitation into the atmosphere: recovery from a geomagnetic storm'**

Craig J. Rodger, Mark A. Clilverd, Neil R. Thomson, Rory J. Gamble, A. Seppala, E. Turunen, N. P. Meredith, Michel Parrot, Jean-André Sauvaud, Jean-Jacques Berthelier

### **► To cite this version:**

Craig J. Rodger, Mark A. Clilverd, Neil R. Thomson, Rory J. Gamble, A. Seppala, et al.. Correction to 'Radiation belt electron precipitation into the atmosphere: recovery from a geomagnetic storm'. Journal of Geophysical Research Space Physics, 2010, 115, pp.A09324. 10.1029/2010JA016038 . hal-00510813

**HAL Id: hal-00510813**

**<https://hal.science/hal-00510813>**

Submitted on 10 Jan 2016

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

## Correction to “Radiation belt electron precipitation into the atmosphere: Recovery from a geomagnetic storm”

Craig J. Rodger, Mark A. Clilverd, Neil R. Thomson, Rory J. Gamble, Annika Seppälä, Esa Turunen, Nigel P. Meredith, Michel Parrot, Jean-André Sauvaud, and Jean-Jacques Berthelier

Received 17 August 2010; accepted 19 August 2010; published 25 September 2010.

**Citation:** Rodger, C. J., M. A. Clilverd, N. R. Thomson, R. J. Gamble, A. Seppälä, E. Turunen, N. P. Meredith, M. Parrot, J.-A. Sauvaud, and J.-J. Berthelier (2010), Correction to “Radiation belt electron precipitation into the atmosphere: Recovery from a geomagnetic storm,” *J. Geophys. Res.*, 115, A09324, doi:10.1029/2010JA016038.

[1] In the paper “Radiation belt electron precipitation into the atmosphere: Recovery from a geomagnetic storm” by C. J. Rodger et al. (*Journal of Geophysical Research*, 112, A11307, doi:10.1029/2007JA012383), the order of equations (3) and (4), as well as (6) and (7), were given incorrectly. These equations describe the effective recombination rates in the D-region of the ionosphere,  $\alpha_{eff}$ . The correct order for the equations are given below.

[2] For nighttime equations, small changes are made in the Rodger et al. [1998] expressions to provide the best quality agreement with SIC nighttime calculations. For altitudes above 80 km,

$$\alpha_{eff} = 2.0 \times 10^{-12} (T_e/300)^{-0.55} \text{ m}^3 \text{ s}^{-1}, \quad (3)$$

where  $T_e$  is the electron temperature, while for altitudes of 80 km and below,

$$\alpha_{eff} = 2.5 \times 10^{-11} \sqrt{300/T_e} \text{ m}^3 \text{ s}^{-1}. \quad (4)$$

For daytime equations, the following is used for altitudes above 84 km,

$$\alpha_{eff} = 5.0 \times 10^{-13} (T_e/300)^{-0.55} \text{ m}^3 \text{ s}^{-1}, \quad (6)$$

while the following is used for altitudes of 84 km and below,

$$\alpha_{eff} = 3 \times 10^{-12} \sqrt{300/T_e} \text{ m}^3 \text{ s}^{-1}. \quad (7)$$

[3] **Acknowledgments.** The authors would like to thank Andrew J. Kavanagh, of the University of Lancaster, for pointing this error out to us.

### Reference

Rodger, C. J., O. A. Molchanov, and N. R. Thomson (1998), Relaxation of transient ionization in the lower ionosphere, *J. Geophys. Res.*, 103(4), 6969–6975, doi:10.1029/98JA00016.